



Overview of the Disaster Monitoring Constellation (DMC) Small Satellites for Disaster Monitoring

Paula Freedman

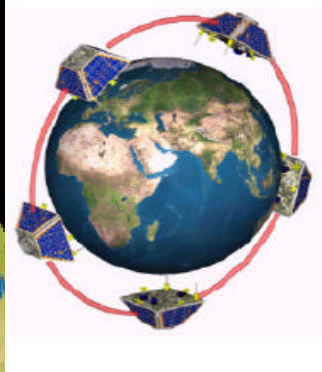
Director, Space Applications

BRITISH NATIONAL SPACE CENTRE

<http://www.bnsc.gov.uk>

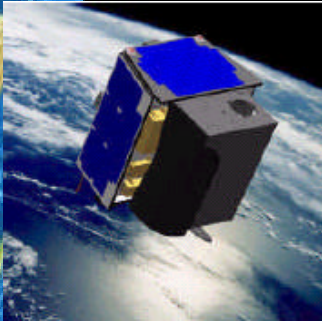
Presentation to
CEOS Plenary
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UK and Small Satellites



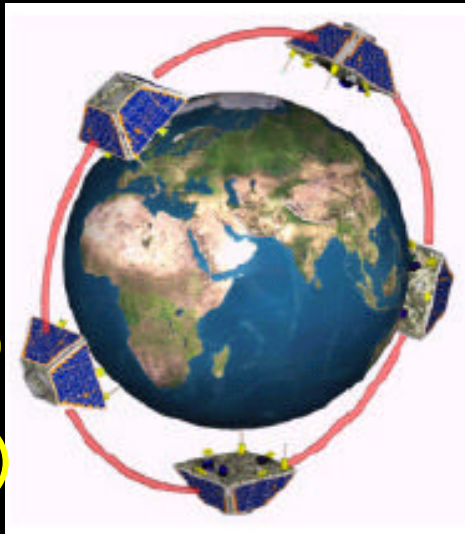
Small satellites widen potential access to space towards new users (complementary capabilities to rich nations, government agencies, and multinationals). Constellations have particular strengths :

- **Timeliness of data = critical for disaster management**
- **Repeat wide area coverage = important for monitoring**
- **MOSAIC: BNSC's national small satellite programme: budget £15M over three years, three bids selected in June 2000 (DMC , TopSat, Gemini)**
- **'Smaller, faster, cheaper, better' for some applications**
- **UK expertise in small satellites (below 300kg)**
- **Surrey Satellites is a major exporter of microsatellites (~50kg with >20 missions launched)**
- **Additionally QinetiQ (previously DERA) development of STRV (Space Technology Research Vehicles)**
- **ESA small satellites: SMART1, PROBA 1 & 2, CryoSat.**



Disaster Monitoring Constellation - DMC

- DMC launch campaign successful to date
- 4 in orbit – (Algeria, Nigeria, Turkey, UK)
- All satellites activated successfully
- Telemetry acquired within hours of launch
- Sep '03 launch injection “perfect”
- Constellation configuration in progress



Timely

Wide
Coverage

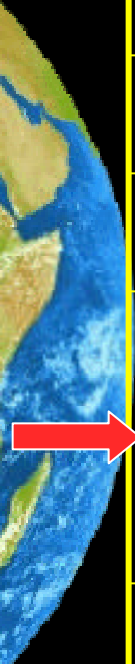
Applications

- Dynamic remote sensing services
- Disaster management support:
 - floods, fires
 - earthquakes, volcanoes
 - landslides
 - large scale industrial accidents
 - civil strife

Mission & Spacecraft

- Daily revisit , worldwide
- 5 equi-spaced s/c @ 686 km
- 80 kg mass; mass limit 140 kg
- 36 m / 600 km swath, tri-linear array imaging payload
- 3-axis momentum bias stabilised <0.01°/s, accuracy <1.0°
- On-board orbit control & GPS orbit determination
- Design Life 5 years

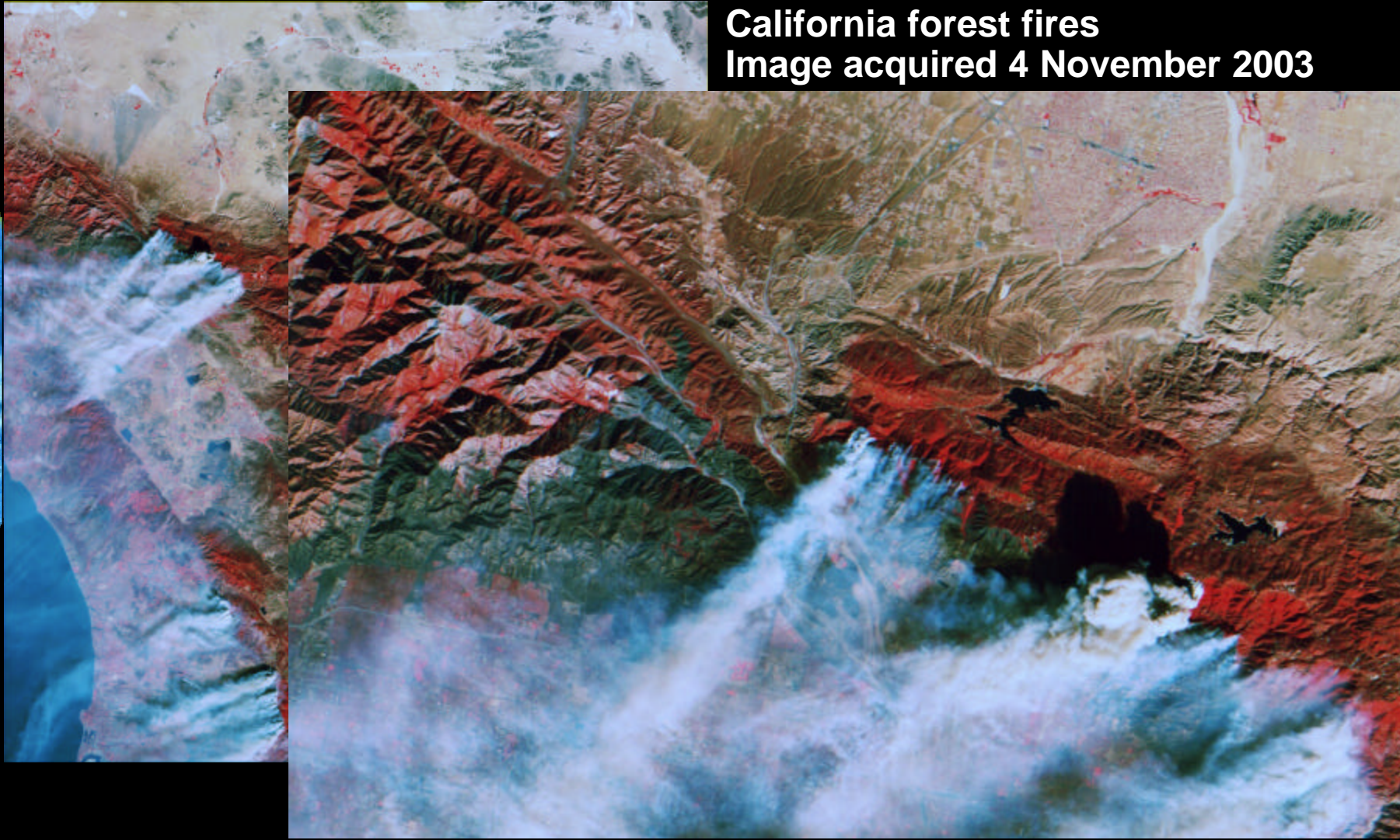
Novel International Partnership



Satellite	Imaging	Owner	Status
AlSat-1	DMC 32m multispectral	CNTS, Algeria	Built at SSTL in orbit Nov 2002
NigeriaSat-1	DMC 32m multispectral	NASRDA, Nigeria	Built at SSTL in orbit Sep 2003
UK DMC	DMC 32m multispectral	SSTL, UK	Built at SSTL in orbit Sep 2003
BilSat	28m multispectral + 12m panchromatic	Tubitak Bilten, Turkey	Built at SSTL in orbit Sep 2003
China DMC	DMC 32m multispectral + 4m panchromatic	MoST, China	Contract signed with SSTL Launch Dec 2004
VNSat-1	DMC 32m multispectral + 4m panchromatic	NCST, Vietnam	Negotiating with SSTL Launch Dec 2004
ThaiPaht-2	32 m multispectral	MUT, Thailand	Building at MUT Launch Dec 2004

First UK-DMC Images

California forest fires
Image acquired 4 November 2003



Integration for Disaster Management

Linkage with international programmes - Addressing Blockages

- **UK MOSAIC – DMC, TOPSAT**
- **International Charter - Space & Major Disasters (Montserrat July '03)**
- **UNISPACE III Action Team 7 - Disaster Management**
- **Reuters AlertNet, UN ReliefWeb, NGO Networks, etc.**
- **IGOS Geo Hazards Theme**
- **CEOS Disaster Management Support Group**
- **Global Monitoring for Environment & Security**
- **WSSD, GEO**





The End



space for science, enterprise and environment